Ethernet Vehicle Gateway Switch

Customer

Customer develops innovative software and hardware solutions for local public transport in the European market for over 40 years. Their goal is to increase the efficiency of the public transport service and optimize the convenience of transportation for all passengers.

Customer Objectives

Customer's new Vehicle Gateway, designed for usage in busses and train vehicles, is equipped with an integrated Ethernet switch device with VLAN functionality. AimValley was asked to provide a software solution solely responsible for configuration and managing of the BCM53282 Ethernet switch.

Design Challenges:

> This gateway needed to be compatible with the existing hardware design and Board Support Packages (BSPs).
> The software should be capable of managing the switch autonomously, without external input and with the possibility to actively manage the switch.
> A cost-efficient solution was another priority, as well as a time restricted delivery schedule.
> The software package is especially designed in such a way that it allows subsequent changes/extensions, e.g. security features.

AimValley Solution
> The software package consisted of a fully optimized version of AimValley's AimOS software stack, to support customer's hardware (BCM53282), delivered as binary code.
> AimOS drivers ported to existing hardware and Board Support Packages.
> Custom driver to create a virtual interface for management and traffic.
> Management interface performance optimizations.

Key Technologies
> Broadcom Switch Technology (BCM53282 Ethernet switch)
> Gentoo Linux
> AimOS tandard version
> Kernel network driver development, IMP (management/CPU port)
> Switch I2C configuration channel

Delivering Solutions for a Connected World

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Results and Added Value

Efficient
Cost effective solution and short development time: 95% reduced time-to-market and development cost due to re-use of IP (standard version of AimOS - binary delivery).

Successful
Successful delivery of solution within very tight schedule: delivery of installable executables and configuration.

Partnership
Cost effective customization in close collaboration with the customer.

Innovation
Alternative routing of user traffic through management port.

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